

Collective bargaining structure and its determinants: an empirical analysis with British and German establishment data

Schnabel, Claus; Zagelmeyer, Stefan; Kohaut, Susanne

Postprint / Postprint

Zeitschriftenartikel / journal article

Zur Verfügung gestellt in Kooperation mit / provided in cooperation with:

www.peerproject.eu

Empfohlene Zitierung / Suggested Citation:

Schnabel, C., Zagelmeyer, S., & Kohaut, S. (2006). Collective bargaining structure and its determinants: an empirical analysis with British and German establishment data. *European Journal of Industrial Relations*, 12(2), 165-188. <https://doi.org/10.1177/0959680106065036>

Nutzungsbedingungen:

Dieser Text wird unter dem "PEER Licence Agreement zur Verfügung" gestellt. Nähere Auskünfte zum PEER-Projekt finden Sie hier: <http://www.peerproject.eu> Gewährt wird ein nicht exklusives, nicht übertragbares, persönliches und beschränktes Recht auf Nutzung dieses Dokuments. Dieses Dokument ist ausschließlich für den persönlichen, nicht-kommerziellen Gebrauch bestimmt. Auf sämtlichen Kopien dieses Dokuments müssen alle Urheberrechtshinweise und sonstigen Hinweise auf gesetzlichen Schutz beibehalten werden. Sie dürfen dieses Dokument nicht in irgendeiner Weise abändern, noch dürfen Sie dieses Dokument für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, aufführen, vertreiben oder anderweitig nutzen.

Mit der Verwendung dieses Dokuments erkennen Sie die Nutzungsbedingungen an.

gesis
Leibniz-Institut
für Sozialwissenschaften

Terms of use:

This document is made available under the "PEER Licence Agreement". For more Information regarding the PEER-project see: <http://www.peerproject.eu> This document is solely intended for your personal, non-commercial use. All of the copies of this documents must retain all copyright information and other information regarding legal protection. You are not allowed to alter this document in any way, to copy it for public or commercial purposes, to exhibit the document in public, to perform, distribute or otherwise use the document in public.

By using this particular document, you accept the above-stated conditions of use.

Mitglied der

Leibniz-Gemeinschaft

**Claus Schnabel, Stefan Zagelmeyer, and
Susanne Kohaut**

Universität Erlangen-Nürnberg, Internationale Fachhochschule
Bad Honnef-Bonn and Institut für Arbeitsmarkt- und
Berufsforschung, Nürnberg, GERMANY

Collective Bargaining Structure and its Determinants: An Empirical Analysis with British and German Establishment Data

ABSTRACT ■ Both Britain and Germany have experienced a substantial decline in collective bargaining coverage in recent decades, though coverage is lower in Britain. Whereas multi-employer bargaining predominates in Germany, single-employer bargaining is more important in Britain. Econometric analyses show that similar variables play a statistically significant role in explaining the structure of collective bargaining in both countries; these include establishment size and age, foreign ownership, public sector affiliation and subsidiary status.

KEYWORDS: collective bargaining ■ bargaining coverage ■ Germany ■ United Kingdom

Introduction

Collective bargaining coverage is an indicator of the practical relevance of collective self-regulation by the labour market parties, and also reflects the power of employers' associations and unions as well as their capacity to shape the regulation of the employment relationship and the labour market.

In his seminal analysis of the decentralization of collective bargaining in industrialized countries, Katz (1993: 19) stated that 'there are few systematic quantitative data tracing the evolution of bargaining structure'. Since then, several studies have provided cross-national data on the structure and coverage of collective bargaining (for example, Traxler and Behrens, 2002; Visser, 2003), on the basis of which there have been empirical analyses of the macro determinants of bargaining centralization

(Traxler, 1996; Traxler et al., 2001). Other research has analysed the determinants of collective bargaining centralization in the United States by using industry-level data (Greenberg, 1966a and 1966b; Hendricks and Kahn, 1982 and 1984). However, the micro determinants of employer demand for collective bargaining and of firms' (as well as unions') choice of governance structures for the employment relationship have received less attention in empirical work (notable exceptions being Deaton and Beaumont, 1980; Booth, 1989), perhaps partly because of a lack of suitable data on the company or establishment level. In recent years, a number of quantitative studies have been published for countries such as Germany (Kohaut and Schnabel, 2003), France (Cahuc and Kramarz, 1997) and the UK (Zagelmeyer, 2004a), but there has been no attempt at comparative quantitative analysis.¹

This article tries to fill this gap by examining the determinants of firms' choice of multi-employer, single-employer or no collective bargaining in Britain and Germany. In both countries, multi-employer collective bargaining played a leading role in the determination of the terms and conditions of employment for most of the post-war period. German industrial relations has displayed a 'relative centralization of collective bargaining . . . at sectoral level' (Jacobi et al., 1998: 191), while multi-employer bargaining also dominated pay determination for the British workforce in establishments with 25 or more employees until the mid-1980s (Brown et al., 2003: 199).

Britain and Germany have both experienced a decollectivization and decentralization of collective bargaining, although these processes started at different points in time, and decentralization has been more 'organized' in Germany (see Zagelmeyer, 2004b). In contrast, the prevailing trend in collective bargaining coverage in most of the EU has been stability (Traxler and Behrens, 2002). In this article we investigate econometrically whether the same factors can explain the choice of bargaining arrangements by British and German firms, and discuss the implications for the future of collective bargaining coverage in both countries.

In the next section, we first outline the legal framework and recent developments concerning collective bargaining in Britain and Germany, then explore the incidence of collective bargaining in both countries, and subsequently discuss the advantages and disadvantages of different arrangements. Following this, we present a theoretical and empirical analysis of the determinants of employer demand for collective bargaining in Britain and Germany, estimating models for both countries using representative data from the German *Institut für Arbeitsmarkt- und Berufsforschung* (IAB) Establishment Panel and the British Workplace Employee Relations Survey (WERS). The final section discusses the results from a comparative perspective and identifies issues for further research.

Collective Bargaining in Britain and Germany: Legal Background, Recent Trends and Incidence

Legal Background

British industrial relations actors — employers, unions and the state — have traditionally preferred voluntary to legislative regulation of the employment relationship (Edwards et al., 1992; Flanders, 1974; Gospel and Palmer, 1993: 155). Without express reference in the individual employment contract, collective agreements are not legally binding and thus not enforceable by law, depending for their ultimate enforcement on the sanctions available to the parties. Each union involved in the conclusion of collective agreements must be recognized by the employer for this purpose. Collective agreements may be reached at any level.

Single-employer agreements may be reached at establishment, company, divisional or corporate level. At shop-floor level, a formal system of collective agreements may coexist with informal rules and agreements that are often termed ‘custom and practice’ (Brown, 1972). At industry level, multi-employer bargaining may be conducted between employers’ associations and trade unions or union confederations, at national or local level.

The German system involves a dual system of representation through trade unions and works councils, extensive juridification, encompassing organizations on both sides of the labour market, and a system of regional industry-level collective bargaining (Jacobi et al., 1998). The constitutionally protected principle of autonomous bargaining (*Tarifautonomie*) gives organizations of employers and employees the right to regulate working conditions without state interference.

Collective agreements are legally binding and may be concluded at either industry level (*Verbandstarifverträge*) or single-employer level (*Firmentarifverträge*). Bargaining is mainly conducted at regional industry level, but in certain industries is frequent at national or company level. Sectoral agreements can be extended by government regulation to all employers and employees in an industry. Another form of collective agreement is the works agreement (*Betriebsvereinbarung*), concluded between a firm and its works council within the legal framework of co-determination. These may not contain provisions which are generally regulated by collective agreement (such as wages), unless expressly permitted by the union–employer agreement.

Recent Developments

In Britain, industry-wide bargaining over terms and conditions of employment became consolidated in the early 20th century, but signs of

decentralization became apparent from the time of the Second World War, with the rise of shop-floor bargaining. The Donovan Report in 1968 made clear that workplace bargaining had become more important than was generally realized. After government attempts to formalize and stabilize collective bargaining within the framework of national incomes policies had failed, the significance of multi-employer collective bargaining continued to decline through the 1970s, although formal coverage rates remained quite high (Brown and Terry, 1978).

Between 1979 and 1997 there were major changes in bargaining arrangements. Zagelmeyer (2004a) estimates the coverage rates of different bargaining arrangements for British establishments with 25 or more employees. While single-employer collective bargaining covered about 20 percent of those establishments between 1980 and 1990, it declined to less than 15 percent in 1998. Multi-employer bargaining covered about 47 percent of those establishments in 1980 and 1984, but declined to 18 percent in 1998. Conversely, the prevalence of individual regulation (no collective bargaining) grew from 33 to 68 percent of all establishments.

For western Germany, it has long been assumed that regional industry-wide bargaining is the most important mechanism. Although no official statistics exist, it was traditionally estimated that collective bargaining covered around 90 percent of all employees (OECD, 1994). However, decentralization was encouraged in the early 1970s by qualitative bargaining policies, which aimed at 'humanizing' working life and protecting employees against the adverse effects of rationalization and technological change. Industry agreements now included provision for negotiation over performance standards, work organization and rest periods, to be determined at establishment level. When unions in the metal and printing industries achieved their goal of a shorter working week, they had to concede more flexible organization of working time, to be implemented for example by works agreement (Bispinck, 1999).

In the 1990s, increasing international competition, high unemployment and German unification accelerated changes in collective bargaining. Increasingly, industry-wide collective agreements included so-called 'opening clauses' which authorized the lower levels, usually the employer and the works council, to deviate from the multi-employer agreement in order to save jobs. Following unification, the transfer of the western German industrial relations and collective bargaining institutions to eastern Germany resulted in a number of frictions, with employers' associations and trade unions both facing difficulties in recruiting and retaining members. A major challenge was the unions' goal of bringing eastern wages up to western levels, despite lower productivity, which induced many firms to opt out of the system. Consequently, the number of firms with company agreements more than doubled in the 1990s (Bispinck, 1999; Hassel, 1999 and 2002; Schnabel, 1998 and 2003).

Representative data show that between 1995 and 2001 the coverage rate of multi-employer collective bargaining fell from 53 to 45 percent of all western German establishments with one or more employees, and from 28 percent in 1996 to 22 percent in 2001 in eastern establishments. Single-employer bargaining also seems to have fallen in recent years while individual regulation has grown, but changes in the survey question mean that these two developments cannot be traced over a longer period of time (Kohaut and Schnabel, 1999 and 2003).

Incidence of Collective Bargaining in Britain and Germany

The availability of large-scale establishment surveys in Britain and Germany makes it possible to estimate and compare bargaining coverage rates. For Britain, we use WERS98, a nationally representative survey of 2191 establishments with 10 or more employees. For Germany, data for the year 2000 are taken from the IAB Establishment Panel. Each year this nationally representative panel surveys several thousand establishments with at least one employee covered by social insurance.² Table 1 displays collective bargaining coverage rates, based on the weighted data of both representative datasets.

In 1998, 26.8 percent of British establishments with 10 or more employees were covered by collective pay bargaining, with 11.7 percent covered primarily by single-employer collective bargaining and 15.1 percent by multi-employer bargaining. Single-employer bargaining coverage varied between 7.5 percent for establishments with 10 to 19 employees and 43.8 percent for those with 1000 and more employees. The respective figures for multi-employer bargaining coverage are 11.5 and 33.3 percent. Hence for both categories of collective bargaining, coverage rates appear to be positively associated with establishment size.

Table 1 displays separate data for western and (post-communist) eastern Germany, since these regions differ considerably in terms of historical traditions and labour market conditions. In 2000, 48.1 percent of western establishments were covered by collective bargaining, with 2.7 percent covered by single-employer and 45.4 percent by multi-employer bargaining. In eastern Germany, 27.5 percent of all establishments were covered by collective bargaining: 4.3 percent by single-employer and 23.2 percent by multi-employer bargaining. Again, as in Britain, coverage rates appear to be positively associated with establishment size in both parts of Germany. To facilitate comparisons with the British data, figures for German establishments with 10 or more employees are presented in the last line of Table 1. They reinforce the impression that single-employer bargaining is relatively more important in Britain, whereas multi-employer bargaining clearly predominates in Germany.

TABLE 1. Bargaining Coverage in Britain and Germany by Establishment Size (%)

Establishment size (number of employees)	Great Britain (1998)		Western Germany (2000)		Eastern Germany (2000)	
	Single-employer CB	Multi-employer CB	Single-employer CB	Multi-employer CB	Single-employer CB	Multi-employer CB
1–9	na	na	2.0	40.9	3.2	18.2
10–19	7.5	11.5	3.1	54.1	6.9	33.0
20–49	10.3	16.3	4.7	59.7	7.1	44.0
50–99	14.5	15.6	8.8	56.9	11.6	48.1
100–199	20.9	23.5	8.2	64.8	13.1	53.8
200–499	32.6	19.1	10.1	68.9	17.3	56.6
500–999	41.7	16.7	12.9	78.4	12.2	74.5
1000 and above	43.8	33.3	12.7	81.2	16.9	77.0
Average	11.7	15.1	2.7	45.4	4.3	23.2
Average, 10 or more employees	11.7	15.1	4.6	57.1	8.0	39.9

Note: CB = collective bargaining.

Sources: WERS98, IAB Establishment Panel 2000; own calculations based on weighted data.

However, it is important to note that the questions regarding bargaining arrangements are different in the two surveys. WERS98 asked for the mode of pay-setting, including collective bargaining levels, for different occupational groups. An establishment was coded as subject to a particular collective bargaining level if it applied to at least one occupational group. Where different groups were under different bargaining arrangements, the highest (or most centralized) was chosen. In contrast, the IAB asks whether the establishment is subject to a multi-employer or single-employer collective agreement, with no explicit reference to pay determination or to occupational group. Although it seems plausible that the highest level of collective bargaining in Britain is similar to the highest level of pay determination, one could also argue that the limitation to the pay issue might cause an underestimation of the general level of collective bargaining coverage.

Advantages and Disadvantages of Different Levels of Regulation

Since some firms prefer single-employer collective bargaining while others prefer multi-employer agreements to determine terms and conditions of employment, different types of bargaining arrangement presumably have specific advantages and disadvantages for industrial relations actors. These have been widely discussed in economics, political science and sociology (for example, Aidt and Tzannatos, 2002; Berthold and Fehn, 1996; Calmfors, 1993; Flanagan, 2003; Moene et al., 1993; OECD, 1997; Traxler et al., 2001). While much research has examined the association between the degree of centralization of a national bargaining system and macroeconomic performance (Calmfors and Driffill, 1988; OECD, 1997), only recently has the focus of attention shifted to the level of pay determination as an explicit decision by the company (Freeman and Gibbons, 1995; Lindbeck and Snower, 2001; Ramaswamy and Rowthorn, 1993; Zagelmeyer, 2004a).

From a macroeconomic perspective, one may assume that any negative effects of collective agreements and wage rises for other employees, employers and consumers are more likely to be internalized, the higher the degree of centralization or coordination of collective bargaining, since bargaining parties at central level cannot escape negative macroeconomic effects such as unemployment. On the other hand, centralized negotiations cannot fully use the information, capabilities and flexibility available at local level and the outcomes are less likely to reflect the economic situation and specific needs of individual establishments and companies.

Decentralized solutions, either single-employer collective agreements or individual regulation, permit agreements tailored to the situation of the company or establishment, including local labour market conditions.

Decentralized regulation should thus provide for a differentiated wage structure and maximization of employment opportunities. However, if the demands of a company's workforce are not only oriented to its specific situation, but rather to the terms and conditions in other establishments or companies, this may lead to pay leapfrogging, particularly if unions are organized above the company level. This may be associated with higher wage increases, supposedly shifting the costs to unemployed outsiders, and national policy-makers will have difficulties in steering macroeconomic wage and price movements.

From the perspective of the company, collective agreements significantly reduce transaction costs by substituting one set of negotiations for a large number of individual bargains and by standardizing the terms and conditions of employment. This advantage is positively associated with the degree of bargaining centralization and bargaining coverage. In addition, wages are largely taken out of competition by multi-employer bargaining, and the shift of industrial conflict to a level above the company reduces the danger that disputes will sour the working atmosphere within the establishment.

In addition to transaction costs, power factors affect employer considerations (Arrowsmith et al., 2003): unionized employers can pool their strength and prevent leapfrogging by bargaining at multi-employer level, which may also minimize the power of the local union(s). The capacity to pool power collectively increases with the homogeneity of activities across firms, whereas greater heterogeneity of activities across companies makes even tacit collusion more difficult. Arrowsmith et al. (2003: 368) argue that intensive competition, which increases uncertainty and instability and acts as pressure for localization in transaction-cost terms, strengthens management's control over the employment relationship. It would further increase management's power to use 'divide and rule' tactics against the unions when it comes to investment decisions between production sites.

Thörnquist (1999: 80), focusing on Sweden, emphasizes politico-ideological motives related to the balance of power between capital and labour as 'of utmost importance' in shaping employer preferences for a particular bargaining level. Centralized systems increase union power and employers may thus favour decentralized bargaining in order to protect management prerogative and control over the employment relationship. Traxler (2003: 2, 19) identifies a tension between performance (or efficiency) considerations and political motives, but concludes that 'extended managerial control may be seen [by the employers] as an end in itself or as a means of improving performance'. The various advantages and disadvantages discussed above point to a potential conflict between the company and macroeconomic perspectives, implying that generally applicable and efficient solutions may be difficult to find.

Furthermore, the advantages and disadvantages of different regulation levels may change over time.

The optimal level of regulation as well as collective bargaining coverage may be affected by macroeconomic trends in various ways. On the one hand, the degree of centralization may increase, because (for Germany) EMU requires a higher degree of nominal wage flexibility, and because it is often assumed that the coordination of collective bargaining will help achieve this better. On the other hand, the prevailing trend over the last decade has been a reduction in inflation rates, and consequently a reduced need for centralized negotiations to ensure wage moderation. Increased unemployment as well as the option of moving production abroad may make decentralized negotiations more attractive for companies, because they reduce insider power and improve the employer's bargaining position. Growing international competition and the increased speed of technological change also entail that the transaction-cost advantage of centralized arrangements decreases in favour of the informational and flexibility advantages of decentralized regulation. Globalization is associated with the increasing importance of flexible work organization to adapt to rapidly changing conditions in product markets, with a shift from Taylorist work organization to greater team orientation, fewer levels of hierarchy, increased individual responsibilities and job enlargement. Investment in firm-specific human capital, employee participation and performance-related compensation become more important. The relatively rigid rules established by collective bargaining, with limited scope for decision-making on compensation systems and other personnel policies, may pose serious problems for many firms and prompt them to opt out of the collective bargaining system.

Empirical Analysis

Previous Empirical Research in Britain and Germany

Despite a growing interest in cross-national variation and longitudinal change in bargaining arrangements and coverage, empirical research on their determinants is still relatively small and has not resulted in an established set of consistent findings. Furthermore, to the best of our knowledge no study has covered more than one country.

There exist only three studies of collective bargaining centralization in Britain. The earliest quantitative study, by Deaton and Beaumont (1980), is based on survey data covering 970 manufacturing firms and shows that regional concentration, labour costs, union density and multi-unionism are positively associated with centralization, while there are negative associations for establishment size, foreign ownership and product

market concentration. The other two studies are based on the WERS Surveys. Booth (1989) shows that centralization is negatively associated with establishment/organization size and foreign ownership, and positively associated with the share of labour costs in turnover. Zagelmeyer (2004a) finds, however, that the influence of several independent variables varies across years, so that their overall impact is not clear-cut.³ In addition, there has been considerable research on the determinants of union recognition in Britain (Beaumont and Harris, 1989 and 1991; Disney et al., 1995; Machin, 2000). Despite differences, a consistent finding is that recognition is positively associated with organization and establishment size and establishment age, and negatively associated with foreign ownership and single-establishment companies.

There is more research on the determinants of bargaining arrangements in Germany, but this is quite heterogeneous with regard to explanatory determinants included in the models. Despite differences in detail, analyses of the choice between decentralized regulation and multi-employer collective bargaining (Bellmann et al., 1999; Kohaut and Schnabel, 2003; Lehmann, 2002) show that establishment size, establishment age, and being a subsidiary establishment of a multi-plant company are positively associated with multi-employer collective bargaining. Further research based on other datasets is mostly consistent with this evidence and points to additional determinants such as union density and workforce composition (Franz and Pfeiffer, 2001; Lehmann, 2002; Hübler and Jirjahn, 2003).

Potential Determinants of Collective Bargaining Structure

Arguments regarding collective bargaining coverage and bargaining centralization range from macro-level determinants (for recent summaries, see Traxler et al., 2001; Zagelmeyer, 2004a) to micro-level determinants (summarized by Lehmann, 2002; Zagelmeyer, 2004a). The present article focuses on micro-level factors affecting the level of regulation of the employment relationship. This section summarizes the theoretical arguments regarding these determinants, focusing on employer choice between three alternative options, namely individual regulation, single-employer collective bargaining and multi-employer bargaining. We assume that the employer has the right to make this choice unilaterally, but this does not preclude negotiation with the union(s) over the bargaining structure and the fact that power relations, and institutional factors (labour law, extension schemes, union strength, employers' associations) will also influence the choice. We go on to estimate an econometric model for the probability that an establishment is associated with a certain governance structure. Since our data are only cross-sectional and do not provide information on all issues of interest from a theoretical perspective, the following analysis

is not an exact testing of hard-to-quantify economic hypotheses, but should rather be seen as an attempt to identify empirically certain characteristics of establishments associated with different forms of regulation.

There are several reasons, in addition to the descriptive evidence presented in Table 1, why company or establishment size may be positively associated with both union recognition and the centralization of bargaining arrangements. As size increases, organizational structures become more complex and personal relationships become more distant, and costs associated with coordination, monitoring and communication increase. Collective bargaining may reduce complexity and improve communication. In addition, transaction costs of concluding individual contracts increase with the number of employees and may be reduced by collective agreements. In addition, centralized collective bargaining provides collective goods, for example wage moderation. Large firms may benefit particularly from the collective goods supplied by multi-employer collective bargaining and hence disproportionately support employers' associations and sectoral bargaining arrangements (Kohaut and Schnabel, 2003). The terms agreed in such bargaining are often oriented towards the less profitable (and usually smaller) companies and hence protect larger, more profitable firms from higher pay claims. Another reason for a positive association between establishment or company size and collective bargaining is that there may be economies of scale for trade unions in terms of organizational activity. Larger establishments may thus be positively associated with unionization, higher membership density and collective bargaining.

On the other hand, larger firms are more likely to experience distinctive industrial relations problems, and have the organizational resources to deal with them independently (Beaumont et al., 1980: 127); whereas smaller companies have a greater need to enhance their bargaining position by combination through multi-employer bargaining. In order to control for non-linearities, we therefore include the establishment size variable in linear and in squared form in the estimations. In addition, a branch plant dummy variable catches the possibility that establishments in multi-plant organizations might more likely be covered by collective bargaining than independent establishments of similar size.

Establishment age may also play a role in bargaining arrangements: recently established businesses (start-ups) often require more flexible institutional arrangements at early stages of their existence. In addition, institutional inertia could lead to path-dependency: companies that have benefited from multi-employer bargaining in the past may retain this arrangement because they have positive expectations of its problem-solving capacity. Limitations in the German dataset force us to restrict establishment age to a dummy variable taking on the value of 1 if the establishment is not more than five years old.

The association between bargaining arrangements and employment structures is open to alternative hypotheses. A homogeneous workforce may be positively associated with demand for collective regulation, as there should be benefits from standardization; in contrast to establishments with highly skilled employees, whose terms and conditions of employment can best be regulated by individual contracts, those with a large proportion of low-skilled employees may be more likely to be covered by collective agreements. On the other hand, it is argued that employees without qualifications or with very low levels of skills have lower propensities to unionize and to handle their employment relationships collectively. The lower levels of firm-specific human capital of such employees also entail less demand for collective regulation on the employer side, since the costs of opportunistic behaviour (and of substituting these workers) that could be reduced by collective regulation and the union monitoring function are lower. In this case one might expect the percentage of low-skilled workers to be negatively associated with collective bargaining.

There exist few clear-cut theoretical hypotheses on how company ownership influences choice among bargaining arrangements. It could be argued that foreign ownership is negatively associated with collective bargaining since the management of establishments controlled by foreign multinationals may require distinctive institutional settings; multinationals may develop their own company- or enterprise-specific employment system which is incompatible with the predominant industrial relations institutions in the host country. Their managements may also copy the supposedly successful institutional and organizational configuration of establishments in their country of origin. Unfortunately, we have no complete data on the country of foreign ownership, but we apply a dummy variable to test whether establishments that are predominantly foreign-owned are more or less likely to rely on collective bargaining.

Our estimations also control for public-sector affiliation of the establishment. While the general behavioural assumption for private-sector firms in capitalist economies is profit-maximization, public-sector establishments may follow different objectives. Beaumont and Gregory (1980: 47) argue that public employers may encourage union organization and collective bargaining in order to improve staff relations and service, implying a positive association with collective bargaining. Moreover, since such establishments, in particular in public administration, have similar structures across the country, there may be benefits from standardizing employment conditions through multi-employer bargaining.

Finally, there may be industry-specific factors, such as the level of collectively agreed wages and the quality of the employers' association, with an impact on collective bargaining coverage. This is (imperfectly)

captured by including a set of industry dummy variables indicating the sectoral affiliation of the main economic activity of the establishment.

Empirical Results

In our empirical analysis we make use of an ordered-probit model that estimates the probability of choosing one of the three alternative options. We thus assume that the dependent variable can be interpreted as an ordered categorical variable, and this for at least two reasons. Following the transaction-cost arguments outlined earlier, the probability of choosing a specific bargaining arrangement increases from individual regulation over single-employer collective bargaining to multi-employer collective bargaining. The employer may reduce transaction costs by moving from individual contracting to standardized single-employer agreements, and even further if an employers' association can deliver collective agreements at lower cost and with additional advantages from specialization effects, reduced risk of industrial action, sectoral standardization of wages and so on. In contrast, under the aspects of flexibility and differentiation, a firm's probability of choosing a specific bargaining arrangement should fall in the same order (with individual contracts offering the greatest and multi-employer arrangements the least flexibility and differentiation). Since both perspectives imply the same order (albeit with different justifications and underpinnings), an ordered-probit estimation is feasible (for details, see Greene, 2000: 875ff.). This is not to deny that alternative models of employer choice are possible, all of which require specific assumptions and have different strengths and weaknesses that cannot be discussed in detail here.

Our empirical results are presented in Tables 2 and 3 in the form of marginal effects (reflecting the effects of a one-unit change in a continuous explanatory variable at its mean or of a discrete change of a dummy variable from 0 to 1 with all other variables set at their sample means). The same models are applied to Britain and to western and eastern Germany. While the descriptive information on collective bargaining incidence is based on weighted data, the econometric investigation uses unweighted data, and all models include the stratification variables of the representative surveys (industry dummies and establishment size) (see Winship and Radbill, 1994 for a discussion of these methodological issues). Definitions and descriptive statistics of the dependent and independent variables used in these estimations can be found in Table A1. The estimates show that almost all independent variables play a statistically significant role in explaining the structure of collective bargaining, although their precise effects differ in Britain and Germany.

We first interpret the public sector dummy variable because it provides a good example of the similarities and differences among the three regions

TABLE 2. Determinants of Collective Bargaining Structure in Britain (1998)

Explanatory variables	No CB	Single-employer bargaining	Multi-employer bargaining
Establishment size (<i>number of employees</i>)	-0.0002** (-6.27)	0.0001** (5.86)	0.0001** (6.20)
Establishment size squared	1.05 e-08** (4.85)	-0.52 e-09** (-4.64)	-0.53 e-09** (-4.82)
Branch plant (<i>dummy: 1 if yes</i>)	-0.20** (-6.50)	0.11** (5.48)	0.09** (7.63)
Establishment age (<i>dummy: 1 if 5 years or less</i>)	0.07* (2.18)	-0.04* (-2.05)	-0.03* (-2.31)
Low-skilled employees (<i>percentage</i>)	0.0003 (0.69)	-0.0001 (-0.69)	-0.0002 (-0.69)
Foreign ownership/control (<i>dummy: 1 if yes</i>)	0.10** (3.38)	-0.06** (-3.08)	-0.05** (-3.70)
Public sector (<i>dummy: 1 if yes</i>)	-0.56** (-18.37)	0.15** (11.88)	0.41** (12.42)
Industry dummies	yes**	yes**	yes**
n	2125	2125	2125
Pseudo R ²	0.226	0.226	0.226

Note: Ordered-probit estimates; dependent variable is an index of the type of collective bargaining; estimates shown are marginal effects. Heteroscedastic-consistent z-values are in parentheses.

* denotes statistical significance at the 0.05 level.

** denotes statistical significance at the 0.01 level.

Source: WERS98; own estimations.

analysed. In accordance with expectations, establishments operating in the public sector are more likely to have collective bargaining than other establishments, *ceteris paribus*. This effect is very strong in Britain where belonging to the public sector lowers the probability of no collective bargaining by 56 percentage points, while increasing the probabilities of single- and multi-employer bargaining by 15 and 41 percentage points respectively (see Table 2). In western and eastern Germany, the probability of multi-employer bargaining rises by only 13 and 21 percentage points respectively, if an establishment operates in the public sector (see Table 3).

The probability of multi-employer bargaining also increases with size of establishment, but at a decreasing rate (indicated by the negative coefficient of the quadratic in establishment size). This effect is strongest in eastern Germany, where simulations show that increasing the size of an establishment from 100 to 200 employees increases its probability of multi-employer bargaining by 6 percentage points (whereas the respective effects are just 2 percentage points in western Germany and

TABLE 3. Determinants of Collective Bargaining Structure in Germany (2000)

Explanatory variables	Western Germany			Eastern Germany		
	No CB	Single-employer bargaining	Multi-employer bargaining	No CB	Single-employer bargaining	Multi-employer bargaining
Establishment size (<i>number of employees</i>)	-0.0002** (-5.58)	-0.00001** (-4.94)	0.0002** (5.54)	-0.0007** (-11.28)	0.00003** (7.23)	0.0006** (11.15)
Establishment size squared	4.47 e-09** (5.38)	3.40 e-10** (4.93)	-4.81 e-09** (-5.36)	-1.25 e-07** (8.92)	-5.85 e-09** (-6.41)	-1.19 e-07** (-8.86)
Branch plant (<i>dummy: 1 if yes</i>)	-0.17** (-15.41)	-0.02** (-11.03)	0.19** (15.18)	-0.22** (-12.31)	-0.005 (-0.30)	0.22** (11.69)
Establishment age (<i>dummy: 1 if 5 years or less</i>)	0.14** (7.19)	0.006** (11.08)	-0.15** (-7.43)	0.12** (6.38)	-0.009** (-4.37)	-0.11** (-6.56)
Low-skilled employees (<i>percentage</i>)	0.0005* (2.51)	0.00004* (2.49)	-0.0005* (-2.51)	0.001** (2.94)	-0.00004** (-2.77)	-0.001** (-2.94)
Foreign ownership/control (<i>dummy: 1 if yes</i>)	0.05* (2.01)	0.003* (2.45)	-0.05** (-2.04)	-0.16** (-3.67)	-0.001 (-0.44)	0.16** (3.47)
Public sector (<i>dummy: 1 if yes</i>)	-0.12** (-5.59)	-0.01** (-4.37)	0.13** (5.46)	-0.21** (-7.15)	0.001 (0.32)	0.21** (6.85)
Industry dummies	yes**	yes**	yes**	yes**	yes**	yes**
n	8006	8006	8006	5301	5301	5301
Pseudo R ²	0.110	0.110	0.110	0.156	0.156	0.156

Note: Ordered-probit estimates; dependent variable is an index of the type of collective bargaining; estimates shown are marginal effects. Heteroscedastic-consistent z-values are in parentheses.

* denotes statistical significance at the 0.05 level.

** denotes statistical significance at the 0.01 level.

Sources: IAB Establishment Panel 2000; own estimations.

1 percentage point in Britain). In both countries, branch plants are less likely to have no collective bargaining and are more likely to be subject to multi-employer agreements than independent establishments, which may reflect a spill-over effect from their parent company. In contrast, newly founded establishments are less likely to make use of multi-employer bargaining, probably because they require more flexible institutional arrangements at this early stage of their existence or because they have not been organized yet by trade unions and employers' associations. In addition, industry effects play a significant role in explaining bargaining arrangements in both countries.

The percentage of low-skilled employees in the workforce seems to be negatively related to multi-employer bargaining, but this effect is statistically significant in Germany only. Foreign ownership or control increases the probability of no collective bargaining by 10 percentage points in Britain and 5 points in western Germany, whereas it lowers this probability by 16 percentage points in eastern Germany.⁴

Despite these differences in detail, the broad picture is that more or less the same set of variables is associated with enterprise-level regulation of the employment relationship in Britain and in both western and eastern Germany. Although the establishment size effect is much stronger in eastern than in western Germany and the foreign ownership effect differs between both regions, we would not conclude from our regressions that the determinants of bargaining structure in eastern Germany are totally different from those in western Germany. Moreover, the east German pattern does not more closely resemble those factors which shape the 'disorganized decentralized' British system (as compared to the 'organized decentralized' western German one), as might have been expected given the different traditions and experience of collective bargaining in the east.

Conclusions

While much international and comparative research has made extensive use of qualitative data obtained through case studies, there are very few examples of comparative research based on company and establishment surveys. Whitfield et al. (1998: 193ff.) make the case for survey-based comparisons by arguing that case studies could be complemented by such quantitative research. They suggest that comparing establishment surveys, if they have common questions and comparable sample populations, may lead to useful results in an informed international comparative analysis at the micro level, but they also warn that problems of incompatibility may occur.

In this article we have tried to identify major determinants of collective bargaining structure by comparing the results of two nationally

representative establishment surveys for Britain and Germany. As the institutional framework in both countries differs and as the British data refer to establishments with 10 or more employees whereas the much larger German dataset covers all establishments with at least one employee, our analyses need to be interpreted with care. We also experienced a potential problem of question incompatibility concerning the dependent variable because the British data focus on pay determination, whereas the German data do not refer to a particular issue. Since pay determination is the major issue in collective bargaining in Germany also, and can be said to determine the choice of bargaining arrangements, and since the dependent variable chosen is very broad, we think that incompatibility is not a serious problem. All in all, we feel that the datasets used and developed possess the characteristic of reasonably close comparability.

This said, we must admit that the variables analysed represent a small subset of those available in both datasets, as well as a subset of those that would be ideal for a comprehensive comparative analysis. Feasibility clearly qualified desirability. We also acknowledge that surveys and cross-sectional analyses tell us little about causal relationships and processes. However, they allow for more comprehensive testing than other approaches, and they enable us to present a broad picture and to identify factors that are associated with firms' choice of a certain level of collective bargaining. Obviously our approach has to be complemented with studies using alternative methods.

Despite these qualifications, some interesting results were obtained from the empirical analyses. For Britain and (western and eastern) Germany alike, the probability of multi-employer bargaining increases with size of establishment, which may reflect the advantage of falling transaction costs. Establishments operating in the public sector are more likely to make use of collective bargaining and are less likely to rely on individual regulation than other establishments — an effect that is particularly strong in Britain. In both countries, branch plants are more often subject to multi-employer agreements than independent establishments.

The lower bargaining coverage of new establishments and the increasing privatization of companies in the public sector both imply that coverage will further decline over time, as has been the case in Britain and Germany in recent decades. However, data limitations make the determinants of changes in firms' bargaining status difficult to identify (for initial attempts see Zagelmeyer, 2004a, for Britain, and Kohaut and Schnabel, 2003, for Germany). Further micro research employing future waves of both datasets should make better use of the panel character of the data. Combined with macro research on bargaining coverage of the type employed, for instance, by Traxler et al. (2001), this should enable us to

obtain a better insight into the determinants of changes in bargaining institutions.

Our finding that more or less the same set of variables is associated with firms' choice of regulation structure for the employment relationship in Britain as in Germany is interesting, since the institutional framework and the bargaining traditions in these countries differ markedly. We would not claim to have identified a common model which fits both countries perfectly or which could be generalized to other countries. It might be interesting to see, however, to what degree these variables also play a role in other countries whose experiences in the coverage and evolution of collective bargaining may have been totally different. While this is beyond the scope of the present study, more comparative research on the determinants of collective bargaining structure, making use of micro- and macroeconometric analyses as well as case studies, is clearly needed.

ACKNOWLEDGEMENTS

The authors would like to thank Thorsten Schank, two anonymous referees and the editor of this journal for helpful comments and suggestions. The provision of the WERS dataset by the UK Data Archive, which is jointly funded by the University of Essex, the Economic and Social Research Council and the Joint Information Systems Committee, is gratefully acknowledged. The Workplace Industrial/Employee Relations Surveys were jointly sponsored by the Department of Trade and Industry; the Department of Employment; the Advisory, Conciliation and Arbitration Service (ACAS); the Economic and Social Research Council; and the Policy Studies Institute. The usual disclaimer applies.

NOTES

- 1 For a qualitative comparative analysis using case studies from Belgium, Germany, Italy and Britain, see Arrowsmith et al. (2003) and Marginson et al. (2003).
- 2 Details regarding these datasets are given in Cully et al. (1999) for WERS98 and Kölling (2000) for the IAB. The two years were chosen because 1998 represents the most recent information available for Britain, and 2000 has the advantage that it is the year in which the IAB panel was substantially augmented, while it is still relatively close to the 1998 date for Britain.
- 3 Kohaut and Schnabel (2003) found similar differences between western and eastern Germany in their probit analysis of multi-employer collective bargaining, but they also were not able to provide a simple and convincing explanation for this result.
- 4 Two additional variables of interest (and suggested by a referee) would be the structure of the product market and union presence or strength within establishments. Unfortunately, information on these variables is not available in the German dataset. Using the four cross-sectional

WIRS/WERS datasets, Zagelmeyer (2004a) studied the association between the presence and level of collective bargaining on the one hand, and (i) union density and/or (ii) geographical scope of the product market and/or (iii) the extent of competition on the other. There were no stable results over time.

REFERENCES

- Aidt, T. and Tzannatos, Z. (2002) *Unions and Collective Bargaining: Economic Effects in a Global Environment*. Washington, DC: The World Bank.
- Arrowsmith, J., Marginson, P. and Sisson, K. (2003) 'Externalisation and Internalisation of Collective Bargaining in Europe: Variation in the Role of Large Companies', *Industrielle Beziehungen* 19: 363–92.
- Beaumont, P.B. and Gregory, M.B. (1980) 'The Role of Employers in Collective Bargaining in Britain', *Industrial Relations Journal* 11(5): 46–52.
- Beaumont, P.B. and Harris, R.I.D. (1989) 'The North-South Divide in Britain: The Case of Trade Union Recognition', *Oxford Bulletin of Economics and Statistics* 51: 413–28.
- Beaumont, P.B. and Harris, R.I.D. (1991) 'Trade Union Recognition and Employment Contraction, Britain, 1980–1984', *British Journal of Industrial Relations* 29: 49–58.
- Beaumont, P.B., Thomson, A.W.J. and Gregory, M.B. (1980) 'Bargaining Structure', *Management Decision* 18(3): 103–70.
- Bellmann, L., Kohaut, S. and Schnabel, C. (1999) 'Flächentarifverträge im Zeichen von Abwanderung und Widerspruch: Geltungsbereich, Einflußfaktoren und Öffnungstendenzen', in L. Bellmann and V. Steiner (eds) *Panelanalysen zu Lohnstruktur, Qualifikation und Beschäftigungsdynamik*, pp. 11–40. Nürnberg: Institut für Arbeitsmarkt- und Berufsforschung.
- Berthold, N. and Fehn, R. (1996) 'Evolution von Lohnverhandlungssystemen — Macht oder Ökonomisches Gesetz?' in W. Zohlnhöfer (ed.) *Die Tarifautonomie auf dem Prüfstand*, pp. 57–94. Berlin: Duncker und Humblot.
- Bispinck, R. (1999) *Stationen der Tarifpolitik von 1949–1999*. WSI Informationen zur Tarifpolitik, Elemente qualitativer Tarifpolitik Nr. 38. Düsseldorf: Hans-Böckler-Stiftung.
- Booth, A. (1989) 'The Bargaining Structure of British Establishments', *British Journal of Industrial Relations* 27: 225–34.
- Brown, W. (1972) 'A Consideration of Custom and Practise', *British Journal of Industrial Relations* 10: 42–61.
- Brown, W., Marginson, P. and Walsh, J. (2003) 'The Management of Pay as the Influence of Collective Bargaining Diminishes', in P. Edwards (ed.) *Industrial Relations — Theory and Practice*, pp. 189–213. Oxford: Blackwell.
- Brown, W. and Terry, M. (1978) 'The Changing Nature of National Wage Agreements', *Scottish Journal of Political Economy* 25: 119–33.
- Cahuc, P. and Kramarz, F. (1997) 'Voice and Loyalty as a Delegation of Authority: A Model and a Test on a Matched Worker-Firm Panel', *Journal of Labor Economics* 15: 658–88.
- Calmfors, L. (1993) 'Centralisation of Wage Bargaining and Macroeconomic Performance: A Survey', *OECD Economic Studies* 21: 161–91.

- Calmfors, L. and Driffill, J. (1988) 'Bargaining Structure, Corporatism and Macroeconomic Performance', *Economic Policy* 6: 14–61.
- Cully, M., Woodland, S., O'Reilly, A. and Dix, G. (1999) *Britain at Work: As Depicted by the 1998 Workplace Employee Relations Survey*. London: Routledge.
- Deaton, D.R. and Beaumont, R.B. (1980) 'The Determinants of Bargaining Structure: Some Large Scale Survey Evidence for Britain', *British Journal of Industrial Relations* 18: 202–16.
- Disney, R., Gosling, A. and Machin, S. (1995) 'British Unions in Decline: Determinants of the 1980s Fall in Union Recognition', *Industrial and Labor Relations Review* 48: 403–19.
- Edwards, P.K., Hall, M., Hyman, R., Marginson, P., Sisson, K., Waddington, J. and Winchester, D. (1992) 'Great Britain: Still Muddling Through', in A. Ferner and R. Hyman (eds) *Industrial Relations in the New Europe*, pp. 1–68. Oxford: Blackwell.
- Flanagan, R.J. (2003) 'Collective Bargaining and Macroeconomic Performance', in J.T. Addison and C. Schnabel (eds) *International Handbook of Trade Unions*, pp. 172–96. Cheltenham: Edward Elgar.
- Flanders, A. (1974) 'The Tradition of Voluntarism', *British Journal of Industrial Relations* 12: 352–70.
- Franz, W. and Pfeiffer, F. (2001) *Tarifbindung und die ökonomische Rationalität von Lohnrigiditäten*. Discussion Paper No. 01–01. Zentrum für Europäische Wirtschaftsforschung, Mannheim.
- Freeman, R.B. and Gibbons, R. (1995) 'Getting Together and Breaking Apart: The Decline of Centralised Collective Bargaining', in R.B. Freeman and L.F. Katz (eds) *Differences and Changes in Wage Structures*, pp. 345–70. Chicago: University of Chicago Press.
- Gospel, H.F. and Palmer, G. (1993) *British Industrial Relations*. 2nd edn. London: Routledge.
- Greenberg, D.H. (1966a) 'Some Industry Characteristics as the Determinants of the Structure of Collective Bargaining'. Unpublished PhD Dissertation. MIT: Boston.
- Greenberg, D.H. (1966b) 'The Structure of Collective Bargaining and Some of its Determinants', in Industrial Relations Research Association (ed.) *Proceedings of the Nineteenth Annual Winter Meeting*, pp. 343–54. Madison: Industrial Relations Research Association.
- Greene, W.H. (2000) *Econometric Analysis*. 4th edn. Upper Saddle River, NJ: Prentice Hall.
- Hassel, A. (1999) 'The Erosion of the German System of Industrial Relations', *British Journal of Industrial Relations* 37: 484–505.
- Hassel, A. (2002) 'The Erosion Continues: A Reply', *British Journal of Industrial Relations* 40: 309–17.
- Hendricks, W.E. and Kahn, L.M. (1982) 'The Determinants of Bargaining Structure in U.S. Manufacturing Industries', *Industrial and Labor Relations Review* 35: 181–95.
- Hendricks, W.E. and Kahn, L.M. (1984) 'The Demand for Labor Market Structure: An Economic Approach', *Journal of Labor Economics* 2: 412–38.

- Hübler, O. and Jirjahn, U. (2003) 'Works Councils and Collective Bargaining in Germany: The Impact on Productivity and Wages', *Scottish Journal of Political Economy* 50: 471–91.
- Jacobi, O., Keller, B. and Müller-Jentsch, W. (1998) 'Germany: Facing New Challenges', in A. Ferner and R. Hyman (eds) *Changing Industrial Relations in Europe*, pp. 190–238. Oxford: Blackwell.
- Katz, H.C. (1993) 'The Decentralization of Collective Bargaining: A Literature Review and Comparative Analysis', *Industrial and Labor Relations Review* 47: 3–22.
- Kohaut, S. and Schnabel, C. (1999) 'Tarifbindung im Wandel', *iw-trends* 26(2): 63–80.
- Kohaut, S. and Schnabel, C. (2003) 'Zur Erosion des Flächentarifvertrags: Ausmaß, Einflussfaktoren und Gegenmaßnahmen', *Industrielle Beziehungen* 10: 188–219.
- Kölling, A. (2000) 'The IAB-Establishment Panel', *Schmollers Jahrbuch — Zeitschrift für Wirtschafts- und Sozialwissenschaften* 120: 291–300.
- Lehmann, K. (2002) *Stabilität und Veränderung der Flächentarifbindung von Arbeitgebern in Deutschland. Eine theoretische und empirische Analyse*. Münster: LIT.
- Lindbeck, A. and Snower, D.J. (2001) 'Centralized Bargaining and Reorganized Work: Are They Compatible?' *European Economic Review* 45: 1851–75.
- Machin, S. (2000) 'Union Decline in Britain', *British Journal of Industrial Relations* 38: 631–45.
- Marginson, P., Sisson, K. and Arrowsmith, J. (2003) 'Between Decentralization and Europeanization: Sectoral Bargaining in Four Countries and Two Sectors', *European Journal of Industrial Relations* 9: 163–87.
- Moene, K.O., Wallerstein, M. and Hoel, M. (1993) 'Bargaining Structure and Economic Performance', in R.J. Flanagan, K.O. Moene and M. Wallerstein (eds) *Trade Union Behaviour, Pay-Bargaining, And Economic Performance*, pp. 63–131. Oxford: Clarendon Press.
- OECD (1994) *Employment Outlook*. Paris: OECD.
- OECD (1997) *Employment Outlook*. Paris: OECD.
- Ramaswamy, R. and Rowthorn, R. (1993) *Centralized Bargaining, Efficiency Wages, and Flexibility*. Working Paper No. 93/25. Washington: International Monetary Fund.
- Schnabel, C. (1998) 'The Reform of Collective Bargaining in Germany: Corporatist Stability vs. Firm Flexibility', in R. Hoffmann, O. Jacobi, B. Keller and M. Weiss (eds) *The German Model of Industrial Relations between Adaptation and Erosion*, pp. 83–95. Düsseldorf: Hans-Böckler-Stiftung.
- Schnabel, C. (2003) *Tarifpolitik unter Reformdruck*. Gütersloh: Bertelsmann Stiftung.
- Thörnqvist, C. (1999) 'The Decentralization of Industrial Relations: The Swedish Case in Comparative Perspective', *European Journal of Industrial Relations* 5: 71–87.
- Traxler, F. (1996) 'Collective Bargaining and Industrial Change: A Case of Disorganization?', *European Sociological Review* 12: 271–87.
- Traxler, F. (2003) 'Bargaining (De)centralization, Macroeconomic Performance

- and Control over the Employment Relationship', *British Journal of Industrial Relations* 41: 1–27.
- Traxler, F. and Behrens, M. (2002) 'Collective Bargaining Coverage and Extension Procedures', *EIROOnline*. URL: <http://www.eiro.eurofound.ie/2002/12/study/tn0212102s.html> (accessed 16 December 2003).
- Traxler, F., Blaschke, S. and Kittel, B. (2001) *National Labour Relations in Internationalized Markets: A Comparative Study of Institutions, Change, and Performance*. Oxford: Oxford University Press.
- Visser, J. (2003) 'Unions and Unionism around the World', in J.T. Addison and C. Schnabel (eds) *International Handbook of Trade Unions*, pp. 366–413. Cheltenham: Edward Elgar.
- Whitfield, K., Delbridge, R. and Brown, W. (1998) 'Using Workplace Surveys for Comparative Research', in K. Whitfield and G. Strauss (eds) *Researching the World of Work*, pp. 193–207. Ithaca: ILR Press.
- Wiedemann, H. (ed.) (1999) *Tarifvertragsgesetz (Kommentar)*. 6th edn. München: Beck
- Winship, C. and Radbill, L. (1994) 'Sampling Weights and Regression Analysis', *Sociological Methods & Research* 23: 230–57.
- Zagelmeyer, S. (2004a) *Governance Structures and the Employment Relationship: Determinants of Employer Demand for Collective Bargaining in Britain*. Oxford: Peter Lang.
- Zagelmeyer, S. (2004b) 'A First Comparative Inquiry into the Causes and Consequences of Procedural Individualisation of Governance Structures in Britain and Germany', *Industrielle Beziehungen* 11: 61–76.

CLAUS SCHNABEL is Professor of Economics at the Universität Erlangen-Nürnberg.

ADDRESS: Volkswirtschaftliches Institut, Lange Gasse 20, 90403 Nürnberg, Germany. [e-mail: claus.schnabel@wiso.uni-erlangen.de]

STEFAN ZAGELMEYER is Professor of Economics and Human Resource Management at the Internationale Fachhochschule Bad Honnef-Bonn.

ADDRESS: Mülheimer Strasse 38, 53604 Bad Honnef, Germany.
[e-mail: s.zagelmeyer@fh-bad-honnef.de]

SUSANNE KOHAUT is Senior Researcher at the Institut für Arbeitsmarkt- und Berufsforschung, Nürnberg.

ADDRESS: Regensburger Strasse 104, 90478 Nürnberg, Germany.
[e-mail: susanne.kohaut@iab.de]

TABLE A-1. Definition and Descriptive Statistics of the Dependent and Independent Variables

Variable	Description and coding	Sample	N	Mean	Std. Dev.	Min	Max
Bargaining arrangements	Categorical variable: 1 = no CB, 2 = single-employer CB, 3 = multi-employer CB	Britain	2125	1.65	1.79	1	3
		W. Germany	8006	2.24	0.94	1	3
		E. Germany	5301	1.85	0.94	1	3
Establishment size	Continuous variable: Number of employees working at the establishment	Britain	2125	286.94	851.91	10	28,971
		W. Germany	8006	242.15	938.71	1	41,638
		E. Germany	5301	119.89	313.89	1	5,715
Establishment size squared	Continuous variable: Number of employees working at the establishment squared	Britain	2125	807746.9	1.88e+07	100	8.39e+08
		W. Germany	8006	939697.4	2.24e+07	1	1.73e+09
		E. Germany	5301	112563.0	1001250	1	3.27e+07
Branch plant	Dummy variable: Establishment is part of a multi-establishment organization = 1	Britain	2125	0.79	0.40	0	1
		W. Germany	8006	0.22	0.42	0	1
		E. Germany	5301	0.19	0.39	0	1
Establishment age	Dummy variable: Establishment has been operating at this address for up to 5 years = 1	Britain	2125	0.16	0.36	0	1
		W. Germany	8006	0.10	0.30	0	1
		E. Germany	5301	0.17	0.38	0	1
Low-skilled employees	Continuous variable: Percentage of total employees who are routine lower-skilled manual or clerical and secretarial	Britain	2125	30.09	26.43	0	100
		W. Germany	8006	26.77	27.98	0	100
		E. Germany	5301	14.29	23.09	0	100

TABLE A-1. Continued

Variable	Description and coding	Sample	N	Mean	Std. Dev.	Min	Max
Foreign ownership/control	Dummy variable: Workplace is predominantly foreign owned (51 percent or more) = 1	Britain	2125	0.10	0.31	0	1
		W. Germany	8006	0.06	0.25	0	1
		E. Germany	5301	0.02	0.15	0	1
Public sector	Dummy variable: Establishment operates in the public sector = 1	Britain	2125	0.30	0.46	0	1
		W. Germany	8006	0.16	0.37	0	1
		E. Germany	5301	0.20	0.40	0	1

Sources: WERS98; IAB Establishment Panel 2000.